



ScotPHO  
Scottish Health and Wellbeing  
Profiles 2015

**Technical Report**

# Contents

|   |    |
|---|----|
| Contents .....  | 2  |
| Introduction .....  | 3  |
| 1. Interpreting the spine charts.....                                       | 3  |
| 2. Measures used in the profiles .....                                      | 5  |
| 3. Confidence intervals .....   | 6  |
| 4. Geographies and populations .....  | 7  |
| 5. Further details on specific indicators .....                             | 7  |
| Indicators 1 to 6 – Life expectancy and mortality .....                     | 8  |
| Indicators 7 to 12 – Behaviours .....                                       | 9  |
| Indicators 13 to 19 – Ill health and injury.....                            | 12 |
| Indicators 20 to 22 – Mental health and function.....                       | 14 |
| Indicators 23 to 26 – Social care, function and housing .....               | 16 |
| Indicators 27 to 30 – Education .....                                       | 18 |
| Indicators 31 to 36 – Economy .....   | 19 |
| Indicators 37 to 42 – Crime.....  | 21 |
| Indicators 43 to 45 – Environment .....                                     | 22 |
| Indicators 46 to 52 – Women’s & children’s health .....                     | 23 |
| Indicators 53 to 56 – Immunisations and screening .....                     | 26 |
| 6. Comparison with 2014 profiles release .....                              | 28 |
| Glossary.....   | 33 |
| Appendix I: Changes to the European Standard Population.....                | 35 |
| Appendix II: Methods used to calculate confidence intervals.....            | 36 |
| Appendix III: Codes used for death and hospital patient indicators.....     | 37 |
| Appendix IV: Codes used for alcohol- and drug- related hospital stays ..... | 39 |
| Appendix V: Codes used for alcohol-related deaths .....                     | 41 |

## Introduction

The Scottish Health and Wellbeing profiles 2015 release is intended to provide service providers, planners and policy makers with nationally comparable information to improve understanding of health issues relating to the people of Scotland, to set these issues in a national context and to take action to improve the health of communities. They provide information for both NHS Boards (based on the revised health board boundaries as at 01 April 2014), intermediate zones and local authorities. The reports currently include: 14 health board, 32 local authority and 1235 intermediate zone spines and supplementary data.

The profiles are designed to make comparison between geographical areas easy. The tool has several features to aid interpretation of any differences seen; for example colour-coding in the spine charts to indicate statistical significance of differences, and confidence intervals in rank charts and time trend graphs. In general, the figures for large areas (with large populations) are less affected by random factors than figures for small areas. Therefore it is more likely that a difference between two NHS Boards is meaningful (statistically significant) than a numerically the same difference between two intermediate zones. This is important to keep in mind when comparing (in particular) small areas.

This document provides technical information to supplement the information contained in the Definitions and Sources table, available in the online profiles tool. It includes extra detail on the 56 spine indicators, their derivation, descriptions of statistics and methods, and caveats about the information.

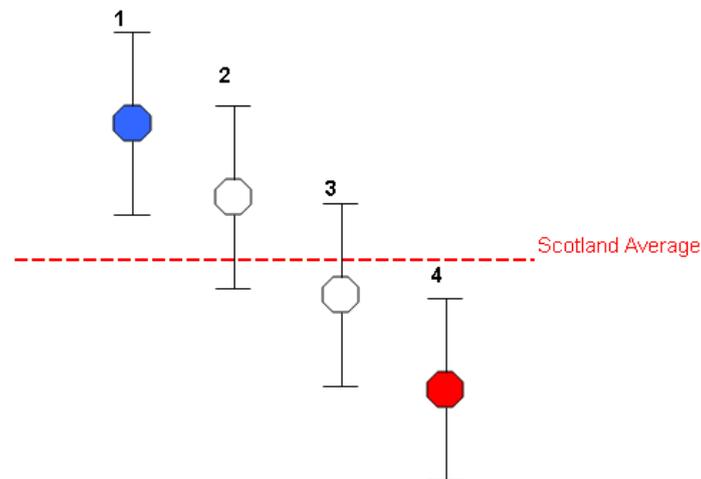
## 1. Interpreting the spine charts

Spine charts are commonly used in public health profiles to illustrate graphically a range of complex information in a way which it is intended will be quickly and easily understood. To aid comparison, in these profiles all the indicators are shown against the Scottish mean value (red line) as a reference. A modified 'traffic light' system has been applied to identify areas which are statistically significantly 'better' (blue) or 'worse' (red) than the Scottish average, or not significantly different from the Scottish average (white). In addition, orange circle with white centre, indicates where an area is significantly different from the Scottish average, but no judgement as to 'better' or 'worse' is appropriate. The 95% level of significance is used throughout.

To take some examples: in some cases (such as death rates) a higher level is clearly 'worse' (red) and a lower level 'better' (blue), while in other cases (such as immunisation coverage) a higher level is clearly 'better' (blue) and a lower level 'worse' (red). Four indicators (children looked after by the local authority, single adult dwellings, referrals to the Children's Reporter for violence-related offences and teenage pregnancies among under-20s) are marked with orange circles with a white centre when significantly higher or lower than the Scottish average, as no judgement is made as to whether a higher or lower level is 'better' or 'worse'.

The 95% confidence interval for an indicator value for an area is used to compare that area against the overall Scotland value. The Scotland value is treated as an exact reference

value, allowing the confidence interval for an indicator value to be used to test whether the value was statistically significantly different to the Scottish figure. If the interval does not include the Scottish value, the area is assessed as being statistically significantly different from Scotland (perhaps 'better' or 'worse', depending on the indicator); if the interval includes the Scottish value, the area is assessed as being similar to Scotland. This is illustrated in the example below.



Area 1: Area is statistically significantly better than the Scotland average.

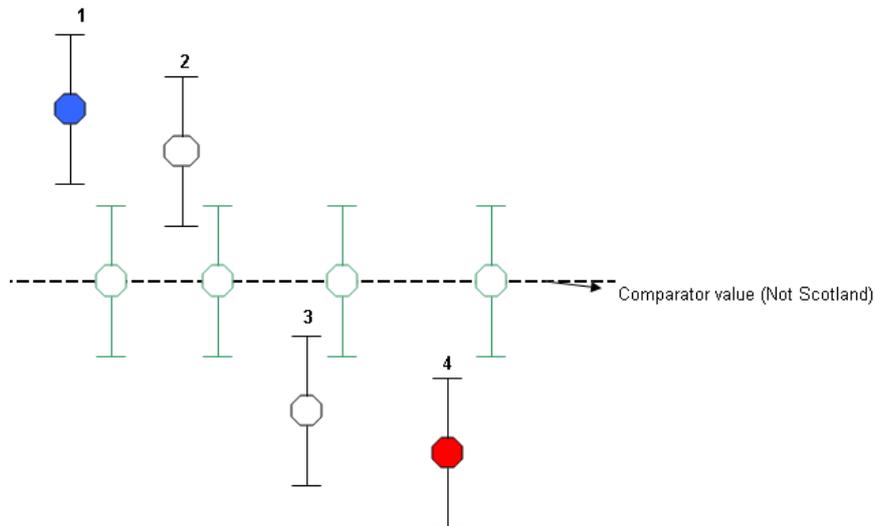
Area 2: Area is similar to the Scotland average.

Area 3: Area is similar to the Scotland average.

Area 4: Area is statistically significantly worse than the Scotland average.

When the comparator is changed from the Scotland average to another area, the comparator is no longer treated as an exact reference value. Instead the confidence interval for the comparator value is used. Statistical significance is determined if the interval for the indicator value falls out with the interval for the comparator value. This is an approximate approach that has been used for the sake of simplicity; future versions of this tool may use more exact methods.

If the interval for the indicator value includes the comparator value (OR any value within the comparator interval), the area will be assessed as being not statistically significantly different. This is illustrated in the example below.



Area 1: Area is statistically significantly better than the Comparator value.

Area 2: Area is similar to the Comparator value.

Area 3: Area is similar to the Comparator value.

Area 4: Area is statistically significantly worse than the Comparator value.

The 5<sup>th</sup>, 25<sup>th</sup>, 75<sup>th</sup> and 95<sup>th</sup> percentiles are also included in the spine charts to show the distribution of the indicators.

Different indicators have different lengths of bars representing the distribution, depending on the variability inherent in the data. Note that in some profiles, the illustration of the distribution may exceed the space allowed for the bar, and is therefore truncated. When the distribution is skewed, the light grey bar will be longer on one side of the dark grey bar than the other.

By default, each indicator is based on the most recent of the time periods given in the Definitions and Sources table (included in the online profile tool). These time periods were the most recent for which data were available at a Scotland level in March 2015.

## 2. Measures used in the profiles

The measures generally follow the statistics and methods recommended by the Association of Public Health Observatories (APHO).<sup>1</sup> The definitions given below are adapted from the APHO paper.

- **Proportions** are statistics where the denominator is the count of a 'closed' population, and the numerator is the count of members of this population that have a specified characteristic. If  $O$  is the observed number of individuals in the sample/population having the specified characteristic and  $n$  is the total number of individuals in the sample/population, then the estimated proportion is given by  $p = O/n$ . In these profiles, proportions have been multiplied by 100 to obtain **percentages** for presentation purposes.

<sup>1</sup> APHO Technical Briefing paper: <http://www.apho.org.uk/resource/item.aspx?RID=48457>. Date of publication 1st March 2008.

- **Crude rates** are calculated in these profiles as follows. If  $O$  is the number of people experiencing an event (such as a hospital admission) in a population of size  $n$  during a period  $t$ , then the estimated crude rate is given by  $r = O/nt$ . The crude rates are expressed per 100,000 population or per 1,000 population, per year.
- **Directly age-sex standardised rates** have been calculated for some hospital patient and mortality indicators because the overall rate may vary with the age-sex structure of the populations. The direct standardisation method was used, with the age-sex specific rates of the local population applied to the age-sex structure of a standard population (in this case the European standard population 2013). This gives the overall rate that would have occurred in the local population if it had the same age-sex profile as the standard population. It allows valid comparisons to be made between local areas with differing population age-sex structures. In the profiles, age-sex standardised rates are expressed per 100,000 population per year. The European standard population (ESP), which was first used in 1976, was revised in 2013. European age-sex standardised rates (EASR) using ESP1976 cannot be compared with EASR using ESP2013. See [Appendix I](#) for further details.

### 3. Confidence intervals

A confidence interval is a range of values that is normally used to describe the uncertainty around a point estimate of a quantity, for example a mortality rate. In the case of indicators based on a sample of the population, uncertainty arises from random differences between the sample and the population itself. The stated value should therefore be considered as only an estimate of the true or 'underlying' value. Confidence intervals quantify the uncertainty in this estimate and, generally speaking, describe how different the point estimate could have been if the underlying conditions stayed the same, but chance had led to a different set of data. The wider the confidence interval, the greater the uncertainty in the estimate.

Confidence intervals are given with a stated probability level. In the Scottish Health and Wellbeing Profiles this is 95%, and so there is a 95% probability (i.e. a 19 in 20 chance) that the confidence interval includes the 'true' value of the indicator. The use of 95% is arbitrary, but is conventional practice in medical and public health statistics. The 95% confidence interval for an indicator value for an area is used to compare the area against the overall Scotland exact reference value. When the comparator is changed from Scotland to another area, the comparator is no longer treated as an exact reference value. Instead the confidence interval for the comparator value is used as described in Section 1.

[Appendix II](#) comprises a table of the methods used to calculate confidence intervals for the different measures used in the profiles, following APHO recommendations.

## **4. Geographies and populations**

On 1<sup>st</sup> April 2014, NHS Board boundaries were changed to align with those of local authorities. This means that all 32 local authorities (1996 configurations) should be coterminous with the 14 NHS Boards based on the 2014 NHS Board boundaries. For most indicators, these new NHS Board configurations were used, with exception of smoking attributable deaths and average tariff score of all pupils on the S4 roll.

Another effect of the NHS Board changes is that the population represented in an NHS Board area may have changed between the 2006 and 2014 configurations. Care should be taken when making comparisons between indicators produced using 2006 and 2014 NHS Board boundaries. Generally, the movement of individuals between boards has been small, but the effect is particularly pronounced for NHS Greater Glasgow and Clyde and NHS Lanarkshire boards, with a large number of individuals previously included within the NHS Greater Glasgow and Clyde are now included within NHS Lanarkshire.

All of the population estimates for the intermediate zones and local authorities presented in the profiles are aggregations of data zone level populations provided by National Records of Scotland (NRS). In all cases 2011 Census based mid-year population estimates have been used.

## **5. Further details on specific indicators**

Please note that all the data presented in the 2015 profiles release are residence-based, to aid public health interpretation. Thus hospitalisation rates are based on a patient's home address (rather than the location of the hospital); child immunisation rates are based on the child's home address (rather than the location of their GP practice); and prisoner population rates are based on the prisoner's address prior to their being imprisoned (rather than the location of the prison).

The raw data used to produce the indicators came from a variety of sources (see Definitions and Sources table in all of the profiles products). Where necessary, some indicators are based on more than one year of data. This is because numbers for a single year may be too small to give robust figures. Combining years allows more reliable figures to be produced.

For the majority of the indicators figures presented in the profiles are aggregations from the 2001 data zones to higher geographical levels. Thus there may be some differences between totals presented here and in the other publications, as by design records with missing data zones are excluded from Scotland and NHS Board totals. In addition, where standardised rates are calculated, records missing age and/or gender variable are not accounted for.

For some indicators obtained from cohort/survey data, the percentages are presented but the numbers are not available.

## Indicators 1 to 6 – Life expectancy and mortality

### The Life expectancy indicators (1 - 2)

The life expectancy (LE) indicators show estimated average life expectancy (for males and females) at birth in years.

LE at birth for an area is the number of years that a newborn baby would live if they experienced the age-specific mortality rates for that area, for the time period used, throughout their life. It is a theoretical measure that reflects recent mortality rates throughout life, rather than a true prediction of the life expectancy of the local population.

The calculations use abridged life tables, with LE calculations based on Chiang (II)<sup>2</sup> methodology. They use NRS mid-year population estimates and death registrations (by year of registration).

For the NHS Board and local authority, LE is calculated over three-year time periods, in line with the NRS publication. However, for the intermediate zone due to the severe instability of the small numbers, LE is calculated over five-year periods. Please note that the data points indicated on a time trend charts represent mid-point within the three- or five-year period depending on selected geography level. That is, for the NHS board and local authority showed year 2011 represents the mid-point for 2010-2012 period, while for intermediate zone it represents 2009-2013 period.

To avoid the least robust situations for the intermediate zones, LE for a sex and area is not calculated where: the five-year total population for that sex was less than 5,000 people; and/or there were fewer than 40 deaths for that sex over the 5-year period.

Moreover, for a small number of intermediate zones LE could not be calculated because an age group had a zero population estimate or no deaths had occurred in the oldest (85+ years) age group. That means some extreme LE estimates are omitted from the full range for intermediate geographies within Scotland. It is therefore not possible to state which intermediate geography has the highest or lowest LE. Over the time period 2009-13, amongst the remaining data for intermediate geographies, LE at birth ranged from 58.4 to 92.0 years for males, and from 70.3 to 94.4 years for females.

Please note that some of these data have large 95% confidence intervals (up to 14 or 12 years). The implications of this are best explained using an example. The lowest remaining male LE at birth (58.4 years) has a confidence interval of 8.0 years, from 54.4 to 62.4 years. This means that there is a 1 in 20 chance that the true LE at birth lies either below 54.4 years or above 62.4 years (although the most likely true value remains at 58.4 years). The wide range of possible values indicates that further caution is required in drawing conclusions about the apparent ranking of small areas.

As small numbers are involved, these estimates for LE at birth in small areas are subject to random fluctuations in the number of deaths and the age at death. As a result, conclusions about time trends for any specific small area may not be reliable. Also, in any small area

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<sup>2</sup> Chiang CL, The life table and its construction, in Chiang CL, Introduction to stochastic processes in Biostatistics. New York, John Wiley 1968.

where the population is changing significantly (rising or falling), the calculated mortality rates and LE estimates may be less reliable as the population estimates may not yet fully reflect this change.

For further details of LE calculation, including imputation of non-resident deaths, please see the Healthy Life Expectancy topic on the ScotPHO website:

<http://www.scotpho.org.uk/population-dynamics/healthy-life-expectancy/references>

### **The mortality indicators (3 - 6)**

The mortality indicators use NRS death registrations (by year of registration), and are calculated over three-year rolling period to ensure reasonably robust estimates for small areas. Rates (presented per 100,000 population) are age-sex standardised against the European standard population (ESP2013). This improves the comparability of rates for different areas by taking into account differences in the age structures of the populations being compared.

The mortality indicators include: death all ages; all-cause mortality among the younger working age population (aged 15-44 years), early deaths from coronary heart disease (<75s); and early deaths from cancer (<75s). Data for years 2011-2013 is presented in the spine chart, while time trends go back to 2002-2004. For list of ICD-10 codes selected for deaths from coronary heart disease and cancer see Appendix III. Calculations are based on Dobson methodology. No suppression is required for these indicators.

## **Indicators 7 to 12 – Behaviours**

### **Estimated smoking attributable deaths (7)**

The methodology used to calculate estimated smoking attributable deaths indicator has been updated to bring the profiles in line with the [Public Health England profiles](#). This means that the figures are not necessarily comparable with those of previous years; thus caution is required when considering these profiles in relation to those of previous years. However, there is now a significant benefit in that our smoking attributable death figures are now directly comparable to those which appear in the Public Health England profiles.

In the absence of direct information on individual smoking histories, a proxy measure was used to calculate the proportion of each death which was due to smoking. In line with the Public Health England method, we only included deaths for those aged 35 and older, as the likelihood of younger individuals dying from smoking is very low.

The methodology used for profiles 2015 release is based on the premise that in developed countries, age-sex-specific mortality rates for cancer, cardiovascular, respiratory and digestive diseases can be used to indicate the approximate numbers and proportions of deaths due to tobacco. Therefore for every death in one of the disease category related to smoking, a smoking attributable fraction (SAF) was calculated. For ICD-10 codes used for each disease see Appendix III.

Each disease had its own sex and age-specific risk associated with it. These can be found in the [Statistics on Smoking in England 2013 publication](#) (Table B.2).

We then calculated a combined age-sex-area specific prevalence for current and ex smokers. This was then divided by 100 to give the proportions of current and ex smokers, specific to each age, sex and area. To do this, the following information was used:

- Local authority, NHS Board and Scotland- specific smoking prevalence, for current and ex smokers
- Age-specific prevalence information, for current and ex smokers

The following equations were used to calculate the specific prevalence for each area:

**Current smoker prevalence**= (current area-specific smoking prevalence / national current smoking prevalence) \* current smokers' age-specific prevalence/100.

**Ex-smoker prevalence**=(ex-smoker area-specific smoking prevalence / national ex-smoker smoking prevalence) \*ex-smokers' age-specific prevalence/100.

In both cases, the prevalence information came from the Scottish Household Survey (SHS). The information was available for 2012 and 2013 only, which meant we were only able to produce one 2-year combined value for this indicator. Values were combined so as to follow the method used in the Public Health England profiles.

This current and ex smoker prevalence information was then used to calculate the SAF, the fraction of each death which could be attributed to smoking. The SAF was calculated using the following:

$$SAF=(prev\_current*(current-1) + prev\_ex*(ex-1))/(1 + prev\_current*(current-1) + prev\_ex*(ex-1)).$$

These SAFs were multiplied by the number of deaths for each area. They were then added together to find the total number of deaths which could be attributed to smoking, which gave the numerator value for each Local Authority and Health Board.

The denominator used NRS mid-year population estimates. This information was then used to calculate a directly age-sex standardised rate per 100,000 people, using the 2013 European standard population. No suppression is required for this indicator.

There are uncertainties over the extent to which deaths from certain causes could be associated with smoking. These causes include: external causes (including fires, suicides, and accidents), neonatal deaths (including stillbirths), all other deaths under 35 years, and deaths from cirrhosis of the liver. Therefore, none of these deaths was attributed to tobacco, even though some of these deaths would have been due to smoking.

### **Smoking prevalence (8)**

The most appropriate indicator for smoking prevalence at small areas is the Scottish Household Survey (SHS), as this has a sufficiently robust sample size. The number of current smokers was obtained by a 'yes' response to the question 'Do you smoke cigarettes nowadays?' in adults aged 16 and over. The SHS contained more information on smoking, including smoking patterns of former smokers, but the sample size was too small for data to be available at local authority (LA) level.

Data was collected from SHS for the years 2005 to 2013. Because of small sample numbers in the LAs, data was amalgamated into three two-year samples: 2005-2006, 2007-2008, 2009-2010 and 2012-2013.

The percentages are calculated using weighted survey estimates, with the base denoting the achieved sample size for each particular indicator. This weight takes account of the disproportionate sampling between local areas, the differential response between these areas, and any residual mismatch between the profile of responding households/adults and the profile of the population. It is because of the degree of estimation that the numerators (i.e. the number column in the spine charts) are not shown.

These figures were provided by the Scottish Government and the confidence intervals are calculated using the standard SHS methodology. No suppression is required for this indicator.

For smoking prevalence was broken down by gender and selected age groups see Tobacco Control Profiles available on ScotPHO website.

### **Alcohol- and drug- related hospital stays (9,11)**

The indicators shown here are the European age-sex standardised rates (EASR) of general acute inpatient & day case stays with (depending on the indicator) either an alcohol- or drug-related diagnosis (in any position) for Scotland.

Hospital activity data are collected across the NHS in Scotland and are based on nationally available information routinely drawn from hospital administrative systems across the country. The principal data source for general acute inpatient & day case stays is the SMR01 dataset. Each individual patient may have more than one stay and hence the number of people discharged within a year will be less than the total number of stays. When figures are broken down by geographical area the numbers in some categories can be very small, particularly for drugs, therefore for drug-related hospital stays a three-year period have been used to ensure reasonably robust estimates for small areas.

Up to six diagnoses are recorded per admission, and episodes with either a main or a supplementary diagnosis of alcohol or drug misuse are included. The ICD-10 codes used for alcohol and drug misuse can be found in Appendix IV.

Note that some caution is necessary when using these data as alcohol (or drugs) misuse may only be suspected and may not always be recorded by the hospital. The figures presented here are based on all alcohol/drugs-related diagnoses throughout the hospital stay and will reflect prevalence in the catchment area as well as local policy with regard to hospital admission and discharge. For this indicator the discharge date refers to the end of the patient's continuous hospital stay, which can be made up of a number of records depending if the patient has been transferred from one hospital to another or from one speciality to another during the stay.

Alcohol-related hospital stays are presented for single financial years, with 2013 data visible in the spine chart and time trends going back until 2002. While drug-related hospital stays are presented as three-year rolling averages, with data for 2011-2013 presented in the spine chart and time trends are available from 2002-2004.

Figures for areas with 5 or less recoded hospital stays are suppressed.

### **Deaths from alcohol-related conditions (10)**

Similar to the alcohol-related stays indicator, this indicator is also a European age-sex standardised rate (EASR). The EASRs are presented as a five-year rolling average number and directly standardised rate to the European standard population (ESP2013). Alcohol-related mortality is extracted from a dataset of all deaths reported to the NRS based on information collected on the medical certificate of cause of death together with any additional information provided subsequently by the certifying doctor. Cases counted for this indicator are those where the 'underlying cause' of death is alcohol, i.e. the disease or injury which initiated the chain of morbid events leading directly to death. This definition is generally used for reporting high level trends in mortality data for national and international statistics. However, it does not include deaths where an alcohol-related condition was recorded as a contributory factor but was not selected as the underlying cause.

The codes included to define alcohol as an underlying cause of death are shown in Appendix II. Figures presented in the spine chart are for 2009-2013 calendar year rolling average and available time trends go back until 2002-2006.

No suppression is required for this indicator as published on NRS website unsuppressed.

### **Active travel to work (12)**

This indicator shows the number and percentage of adults travelling to work by either cycling or walking.

The indicator used the cohort of all adults employed, self-employed or in full-time education and not working from home taken from the random respondents to the Scottish Household Survey (SHS) question RD3 "How do you usually travel to work (or academic/college/university if in full time education)?". The options listed are: walking; driving car/van; passenger car/van; motorcycle/moped; bicycle; academic bus; works bus; ordinary bus; taxi; rail; underground; ferry; aero plane; horse-riding; other.

The indicator measures those adults who responded with either walking or cycling. The denominator is the total number of random adults answering this question (from the relevant local authority).

Figures presented in the spine chart represent total number and percentage over combined survey years 2012 and 2013, while available time trends go back to combined survey years 2007 and 2008. Only NHS Board and local authority level data is available.

## **Indicators 13 to 19 – Ill health and injury**

### **Patients registered with cancer (13)**

This indicator is the European age-sex standardised rate (EASR) for patients newly diagnosed with cancer, expressed as a three-year rolling average number and EASR per 100,000 population.

Information is derived from Scottish Cancer Registry based on primary diagnosis code, as listed in Appendix III. Figures presented in the spine chart are for 2011-2013 calendar years and available time trends go back until 2002-2004. The confidence intervals were calculated using the Dobson method (see Appendix II). No suppression is required for this indicator.

### **Patient hospitalised indicators (14 - 16)**

The indicators shown here are the European age-sex standardised rates (EASR) of general acute inpatient & day case stays with (depending on the indicator) either chronic obstructive pulmonary disease (COPD), coronary heart disease (CHD) or asthma diagnosis for Scotland.

Hospital activity data are collected across the NHS in Scotland and are based on nationally available information routinely drawn from hospital administrative systems across the country. The principal data source for general acute inpatient & day case discharges is the SMR01 dataset. Each individual patient may have more than one stay. However for these indicators each patient is selected only once per year, based on his or her first related admission to hospital that year. Patient's demographic data (age, gender, location of residence) are extracted from the first valid information within that stay.

Up to six diagnoses are recorded per admission (primary position and five secondary positions) on the hospital records. Records with only primary diagnosis of CHD or asthma were selected for the corresponding indicators. Stays with either a main or a supplementary diagnosis of COPD were included.

Each of these three indicators is expressed as a three-year rolling average number and EASR per 100,000 population. Figures presented in the spine chart are for 2011-2013 calendar years and available time trends go back until 2002-2004. The confidence intervals are calculated using the Dobson method (see Appendix II). A list of all ICD-10 codes used for hospital based indicators can be found in Appendix III. No suppression is required for these indicators.

### **Patients with emergency hospitalisations (17)**

This indicator is the European age-sex standardised rate (EASR) of general acute inpatient & day case emergency admissions to hospitals in Scotland.

Hospital activity data are collected across the NHS in Scotland and are based on nationally available information routinely drawn from hospital administrative systems across the country. The principal data source for general acute inpatient & day case stays is the SMR01 dataset. Each individual patient may have more than one emergency stay. However for this indicator each patient is selected only once per year, based on his or her first emergency admission to hospital that year. Patient's demographic data (age, gender, location of residence) are extracted from the first valid information within that stay record. The Scotland total does not match the sum of the local authorities (LA) or the intermediate zones (IZ) as some patients may be resident in more than one LA or IZ during one calendar year.

This indicator is expressed as a three-year rolling average number and EASR per 100,000 population. Figures presented in the spine chart are for 2011-2013 calendar years and available time trends go back until 2002-2004. The confidence intervals are calculated using

the Dobson method (see Appendix II). A list of codes used to identify emergency hospital admission can be found in Appendix III. No suppression is required for this indicator.

### **Patients (65+) with multiple emergency hospitalisations (18)**

This indicator is the European age-sex standardised rate (EASR) of patients aged 65-years and over who had two or more general acute inpatient & day case emergency admissions to hospital in Scotland.

The principal data source for general acute inpatient & day case stays is the SMR01 dataset. If one patient had two emergency continuous spells of care in hospital in a year and another patient had ten emergency stays in hospital in the same year, then they would simply count as two patients with multiple emergency admissions. The Scotland total does not match the sum of the local authorities (LA) or the intermediate zones (IZ) as some patients may be resident in more than one LA or IZ during one calendar year, and as we had counted as multiple emergency admissions only those that happened while patients resided in the same geography.

This indicator is expressed as a three-year rolling average number and EASR per 100,000 population. Figures presented in the spine chart are for 2011-2013 calendar years and available time trends go back until 2002-2004. The confidence intervals are calculated using the Dobson method (see Appendix II). A list of codes used to identify emergency hospital admission can be found in Appendix III. No suppression is required for this indicator.

### **Road traffic accident (RTA) casualties**

This indicator is the European age-sex standardised rate (EASR) of patients who were discharged from hospital after an emergency admission or who died as a result of a road traffic accident in Scotland.

The principal data source for this indicator is the SMR01 dataset linked to NRS death registrations. Patient was selected only once per year, based on their RTA admission to hospital that year. Patient's demographic data (age, gender, location of residence) is extracted from the first valid information within that stay.

This indicator is expressed as a three-year rolling average number and EASR per 100,000 population. Figures presented in the spine chart are for 2011-2013 calendar year rolling average and available time trends go back until 2002-2004. The confidence intervals are calculated using the Dobson method (see Appendix II). A list of codes used to identify RTA hospital admission and RTA related death can be found in Appendix III. No suppression is required for this indicator.

## **Indicators 20 to 22 – Mental health and function**

### **Patients prescribed drugs for anxiety/depression/psychosis (20)**

This indicator shows estimated number and percentage of the population being prescribed drugs for anxiety, depression or psychosis.

The drugs selected were: British National Formulary (BNF) code 4.1.2 (Anxiolytics), BNF code 4.2 (Antipsychotics) and BNF code 4.3 (Antidepressants).

These indicators are derived from prescribing data at council area and Scotland level using patient based analysis.

Patient based analysis has been made possible through the availability of comprehensive patient identifiable data. All NHS patients have a unique Community Health Index (CHI) number which makes it possible to identify which prescription items have been dispensed for individual patients. The proportion of prescriptions with a valid CHI number recorded is now high enough to make patient based analysis possible.

The patient count only includes patients who have had items dispensed that have a valid CHI number attached. The CHI capture rate for financial years 2009-2013 on the Scotland level is above 90%. The local authority (LA) figures are similar however there are a couple that are lower, most notably Aberdeen in 2009 is at 84% which is still relatively high. 2010 onwards are all above 90% capture rate. However, as the CHI capture rate is less than 100%, there is a small amount of underestimation in the number of patients who have had these drugs dispensed.

At LA area level, the number of patients relates to the number of patients who have been dispensed at least one prescription item for anxiety/ depression/ psychosis during the course of the financial year, who are resident in that council area. At Scotland level, patients that are resident in Scotland and have been dispensed at least one item are included. The Scotland total does not match the sum of the LA areas as some patients may be resident in more than one LA during the financial year. Any items prescribed in England are excluded.

Figures presented in the spine chart are 2013 financial year and available time trends go back until 2009. Numbers less than or equal to 10 have been suppressed.

### **Patients with a psychiatric hospitalisation (21)**

This indicator is the European age-sex standardised rate (EASR) of discharged from psychiatric hospitals in Scotland.

People with mental health problems are cared for by a range of NHS services in a range of settings. Patients receiving their care as inpatients in mental health (psychiatric) hospitals generate records held nationally on Scottish Morbidity Record 04 (SMR04). Each individual patient may have more than one discharge. However for this indicator each patient is selected only once per year, based on his or her first discharge date. Patient's demographic data (age, gender, location of residence) are extracted from the first valid information within that stay.

This indicator is expressed as a three-year rolling average number and EASR per 100,000 population. Figures presented in the spine chart are for combined calendar years 2011-2013 and available time trends go back until 2002-2004. The confidence intervals were calculated using the Dobson method (see Appendix II).

Numbers less than or equal to 10 have been suppressed.

### **Deaths from suicide (22)**

In the profiles, a suicide is defined as a death resulting from intentional self-harm or undetermined intent. The data comprises suicides occurring in Scotland registered by the

National Records of Scotland (NRS). This includes a small proportion of deaths for persons who were not resident in Scotland, who are assigned to their place of death instead, and excludes deaths of residents of Scotland occurring outwith Scotland. Deaths data is analysed here by date of registration of death rather than date of death.

In 2011, NRS changed its coding practice with some deaths previously coded under 'mental and behavioural disorders' now being classed as 'self-poisoning of undetermined intent' and consequently as undetermined intent suicides. The profile presents data based on the old coding rules so that trends over time can be assessed.

This indicator is expressed as a five-year total number and five-year EASR per 100,000 population. Figures presented in the spine chart are for combined calendar years 2009-2013 and available time trends go back to 2002-2006. The confidence intervals were calculated using the Dobson method (see Appendix II). For ICD-10 codes are used for intentional self-harm and undetermined intent see Appendix III.

Numbers less than or equal to 5 have been suppressed.

For further details on suicides in please see the [Health, Wellbeing and Disease topic on the ScotPHO website](#).

## **Indicators 23 to 26 – Social care, function and housing**

### **Adults claiming incapacity benefit/severe disability allowance or employment support allowance (23)**

This indicator shows the number and percentage of all adults aged 16 years and over claiming incapacity benefit/severe disability allowance (SDA) or employment and support allowance (ESA).

Employment and Support Allowance (ESA) replaced Incapacity Benefit (IB) and Income Support paid on the grounds of incapacity for new claims from 27th October 2008. This had previously resulted in a reduction in the IB figures however recipients of ESA are now included in this indicator for the 2015 Health and Wellbeing Profiles.

Figures presented in the spine chart are a snapshot measured as at the end of May 2013 and available time trend goes back until May 2009.

Supplier provided data with numbers rounded to the nearest 5, i.e. the 0, 5, 10 etc.

### **People (65+) with high levels of care needs who are cared for at home (24)**

This indicator shows the percentage of people aged 65 years and over, with high levels of care needs who are receiving 10 and more hours of home care (purchased or provided by a local authority).

The denominator includes all people aged 65 and over with high levels of care needs, that is those who are receiving 10 and more hours of home care (purchased or provided by a local authority), or reside in a Care Home, or are long-term NHS hospital residents. The Home Care/Continuing Care figures are based on separate census data collected in March of each

financial year, while the Care Home residents are calculated as an average of the figures for each quarter in the year.

Indicator is assigned to 'worse' if percentage is below the Scottish average.

Figures presented in the spine chart are for financial year 2013 and available time trend goes back until 2002. This indicator is available only at NHS Board and local authority level. Small numbers suppression is not required.

### **Children looked after by local authority (25)**

This indicator shows the number and crude rate per 1,000 population of children looked after by local authority (LA).

Data is available at NHS Board and LA level only, for academic year periods, i.e. from 1st August to 31st July. Denominator is based on 2011 mid-year estimates for children aged 0 - 18. A child may start and cease to be looked after more than once during the year and was counted once for each episode of care starting and ending.

Figures presented in the spine chart are for academic year 2013/14 and available time trend goes back until 2010/11. Please be aware that the 'year' shown in Profiles 2015 for this indicator is the second half of the academic year, i.e. August 2013-July 2014 is shown as 2014, in accordance with relevant Scottish Government publications. However, for all other indicators in 2015 profiles release, academic or financial year is described by the first half of the relevant academic or financial year.

Values for this indicator are not categorised as 'better' or 'worse' than the Scottish average within spine charts. Small numbers already suppressed by the data provider.

### **Single adult dwellings (26)**

This indicator shows the number and percentage of dwellings subject to a council tax discount of 25%. This may include, for example, dwellings with a single adult, dwellings with one adult living with one or more children, or with one or more adults who are 'disregarded' for council tax purposes.

These are the number of dwellings which are entitled to a 'single adult' council tax discount. This category includes one adult living alone or with children, or with other people who are 'disregarded' for council tax purposes.

These data are collected as part of Scottish Government's statistical support for local government's CTAXBASE data collection. They have been obtained from council area council tax billing systems.

Figures presented in the spine chart are for calendar year 2013 and available time trend goes back until 2008.

Values for this indicator are not categorised as 'better' or 'worse' than the Scottish average within spine charts. No suppression is required for this indicator.

## **Indicators 27 to 30 – Education**

### **Average tariff score of all pupils on the S4 roll (27)**

This indicator shows the average tariff score (pupil attainment) of all pupils enrolled in fourth year publicly funded secondary schools (S4).

The average tariff score enables different types of certification to be considered together, making it easier to compare average educational attainment for different areas. The tariff score of a pupil is calculated by allocating a score to each level of qualification and award, using the Unified Points Score scale. For example, a Standard Grade at level 1 counts as 38 points, and at level 4 counts as 14 points.

Data for this indicator are restricted to secondary year 4 (S4) pupils attending publicly funded secondary schools. The data do not include: pupils attending publicly funded special schools and private independent schools; adults attending publicly funded secondary schools; and pupils educated out with the school education system (e.g. at home).

Data is not available for the 2014 NHS Board boundaries, therefore reported for the old, i.e. 2006 boundaries (for more details see 'Geographies and populations' section of this report).

Figures presented in the spine chart are for academic year 2012/13 and available time trend goes back until 2002/03. Significance level is not calculated for this indicator. Suppression is not required.

### **Primary and secondary school attendance (28-29)**

These indicators show number and percentage of all pupils attending primary and secondary academic respectively, for each academic year (based on pupil residence).

The total number of pupils and attendance rate for each year are extracted from Scottish Neighbourhood Statistics (SNS), and then used to calculate the numerator.

Figures presented in the spine chart are for academic year 2010/11 and available time trend goes back until 2003/04. Data for more recent years was not available for small geographies, therefore not included in this update. No suppression is required for these indicators.

### **Working age adults with low or no educational qualifications (30)**

This indicator shows percentage of the working age population (defined here as 16 to 64 year olds), with no qualifications or qualifications at SCQF level 4 or lower.

The information is extracted from SNS and taken from Annual Population Survey (APS) and the denominator is a total of all those people who answered the related question.

The APS was introduced in January 2004 and combines results from the Labour Force Survey (LFS) and the English, Welsh and Scottish Labour Force Survey boosts. The boosts increase the sample size which means the APS can provide more robust labour market estimates for local areas compared to the main LFS. The APS is the largest annual household survey in Scotland and provides a wealth of information about individuals'

personal circumstances and their work. The LFS surveys individuals living at private households in the UK and is designed to be representative of the national population.

Figures for 2013 are presented in the spine chart, while available time trend goes back to 2004. Data for this profile was provided as already in rate format, therefore there is not enough information to calculate confidence intervals and significance level for this indicator. No suppression is required.

## **Indicators 31 to 36 – Economy**

### **Populations income and working age employment deprived (31 - 32)**

Those indicators show number and percentage of, respectively: a total population classified as income deprived, or working age population (defined here as 16 to 64 year olds) classified as employment deprived within SIMD income domain.

The confidence intervals were calculated using the Wilson method (see Appendix II). Figures for calendar year 2013 are presented in the spine chart and the time trend is available from 2004.

There have been four relevant SIMD releases for the time period covered by profiles time trend (2004, 2006, 2009 and 2012). To ensure that the SIMD categories are the best available representation of deprived areas at each of the points in the time, we apply index release most pertinent to particular year in trend.

The percentage of working age population for years before the equalisation of male and female state pension age, i.e. 2004 to 2010, is calculated against population estimates for 16 to 64 year old males and 16 to 60 year old females. The 2011 to 2013 figures use the same age cohort, i.e. 16 to 64, for both genders.

No suppression is required for these indicators.

For information on how the SIMD 2012 is calculated please see the SIMD website: [SIMD2012](#) and [SIMD2012 Background Data](#).

### **Working age population claiming Out of Work benefits (33)**

This indicator shows number and percentage of working age population (defined here as 16-64 year olds) claiming 'key out of work benefits'.

'Key out-of-work benefits' is a Department of Work and Pensions (DWP) term which covers the following benefits: Jobseeker's Allowance, Employment and Support Allowance, Incapacity Benefit, Severe Disablement Allowance, Income Support with a child under 16, No partner /lone parent and other Income Support, as well as Pension Credit. Please note that this list is slightly different from 'key benefits', which also include Disability Living Allowance.

The data in the spine chart is presented as point in time snapshot at the end of May 2013, with the time trend available from May 2002. The percentage of working age population for years before the equalisation of male and female state pension age, i.e. 2004 to 2010, is

calculated against population estimates for 16 to 64 year old males and 16 to 60 year old females. The 2011 to 2013 figures use the same age cohort, i.e. 16 to 64 for both genders.

No suppression is required for this indicator.

### **Young people not in education, employment or training (NEET) (34)**

This indicator shows number and percentage of 16 to 19 year olds that are not in education, employment or training.

It is recognised that the number of 16-19 year olds not in employment, education or training is underestimated by approximately 20-25%. The figures presented here are from SLDR and DWP benefits data (see [LA NEET Table 2](#)) and we recognise that the national NEET figure derived from APS survey might vary. However, due to the nature of analysis (small area) carried out in the profiles; we opted to purposefully not use APS figures due to consistency. For more information please see [SG LA NEET website](#)

Data available at NHS Board and local authority level only. Figures presented in the spine chart are for calendar year 2013 and 10-year time trend is available. Figures are rounded to the nearest 10, i.e. 0, 10, 20 etc.

### **Children living in poverty (35)**

This indicator shows number and percentage of dependent children under the age of 20 in families that receive Child Tax Credits (<60% median income) or Income Support/Jobseeker's Allowance.

The total number of children in the area is produced using Child Benefit data held by HMRC which covers around 96% of children. All of the estimates are independently rounded to the nearest 5, therefore aggregating the individual estimates may not sum to the given totals for an area. The estimates are based on the finalised awards tax credits data, and as such are derived from a full set of administrative records rather than a sample. From this data the "sub-period" of the award that spanned the 31st August is selected.

The figures presented here come from HMRC (2012) publication and we recognise that most up-to-date Scottish average could be accessed using different data sources such as FRS. But, due to the nature of analysis (small area) carried out in the profiles; we opted to purposefully not use those data sources. (Latest 2012/13 figures from [www.scotland.gov.uk/Resource/0045/00454875.pdf](http://www.scotland.gov.uk/Resource/0045/00454875.pdf) Table A1)

Figures in the spine chart are presented for August 2012, with time trend available from August 2009.

### **People claiming pension credits (aged 60+) (36)**

This indicator shows number and percentage of population aged 60 years and over claiming pension credit.

Pension credit includes a guarantee credit and a savings credit. People who receive both are included in profile calculations. The data is provided by DWP and refer to a snapshot in time taken at the end of May each year; the spine presents 2013 figures, with time trend available from May 2004. No suppression is required for this indicator.

## Indicators 37 to 42 – Crime

### Crime rate (37)

This indicator shows number of crimes (based on SIMD crimes of violence; drug offences; domestic house breaking; minor assault; and vandalism) and crude rate per 1,000 population.

Figures presented in the spine chart are for calendar year 2013, with time trend available from 2004.

There have been four relevant SIMD releases for the time period covered by profiles time trend (2004, 2006, 2009 and 2012). To ensure that the SIMD categories are the best available representation of deprived areas at each of the points in the time, we apply index release most pertinent to particular year in trend.

No suppression is required for this indicator.

For information on how the SIMD 2012 is calculated please see the SIMD website: [SIMD2012](#) and [SIMD2012 Background Data](#).

### Prisoner population (38)

This indicator is the European age-sex standardised rate (EASR) of prisoner population (those aged 16 and over) based on the prisoner's home address.

Figures presented in the spine chart are a snapshot measured as at the end of March 2012 and only at NHS Board and local authority level. No time trend data is available. Numbers less than or equal to 5 are suppressed.

### Referrals to Children's Reporter for violence-related offences

This indicator provides information on the number of children, aged 8-15, and referred to the Scottish Children's Reporter Administration (SCRA) for 'violence-related offences'. Children and young people are referred to the SCRA because some aspect of their life is giving cause for concern. They may be referred from a variety of sources, including police, social work, education and health. Each referral is then investigated to determine whether compulsory measures of intervention are required. Referrals may be on offending grounds or non-offending grounds, with the former being subdivided by type of offence. Profiles 2015 use a bespoke definition of what constitutes a 'violence-related' offence. The definition includes a broad range of offences, commonly associated with violence, as listed below:

- Assault
- Assault with attempt to rob
- Assault with intent to ravish
- Attempted murder
- Bodily injury
- Carrying offensive weapon
- Culpable homicide
- Indecent assault
- Knives (Sc) Act s.1

- Murder
- Possession of firearm with intent to injure/to rob
- Rape
- Serious assault
- Willful and malicious fire-raising.

Please be aware that children may be counted against more than one offence and/or local authority. Data are presented as a number and the crude rate per 1,000 population aged 8 to 15 years. Referrals to SCRA may include children aged over 15 years who are subject to a supervision requirement, but such referrals are excluded for the purpose of this indicator. In addition, it is important to note that very serious offences such as rape, murder, etc. are almost always dealt with by the Criminal Justice System and not the Children's Hearing System.

This indicator is included in the profiles as it provides a measure of violent behaviour in children and young people. Local referring practice may vary and this indicator may reflect the extent to which violent offences are reported and acted upon, as well as the actual rate of occurrence of such offences. Accordingly, local interpretation is crucial and values for this indicator are not categorised as 'better' or 'worse' than the Scottish average within spine charts. As with all indicators, additional caution should be used when interpreting information based on a small number of events. It should be noted that there has been a significant drop in the number of referrals to the Children's Reporter for violence related offences since the publication of the 2010 Profiles.

Figures presented in the spine chart are presented for 2013 financial year, and time trend is provided from 2011. Only NHS Board and Local Authority level data is available. Numbers less than or equal to 10 are suppressed.

### **Domestic abuse, violent crimes and drug crimes recorded (40 - 42)**

Those are three new indicators added to the profiles within 2015 release. Those indicators are expressed as number and crude rate per 10,000 population, for domestic abuse based on victim's place of residence, and for violent and drug crimes on offender's place of residence.

Data is available only on NHS Board and local authority level. Domestic abuse figures in the spine chart are represented for financial year 2012, with time trend available from 2003. While figures for violent crimes and drug crimes recorded are available for financial years 2004 to 2013.

Numbers less than or equal to 10 are suppressed for all three indicators.

## **Indicators 43 to 45 – Environment**

### **Population within 500 metres of derelict site (43)**

In the 2015 profile release data for this indicator is sourced from the Scottish Vacant and Derelict Land Survey (SVDLS) and presented as a number and percentage of population living within 500 meters of a derelict site. The spine chart shows figures for calendar year 2013, with time trend available from 2007.

No suppression is required for this indicator.

#### **People living in 15% most 'access deprived' area (44)**

Number and percentage of population living in 15% most 'access deprived' areas (2001 data zones) in Scotland, based on ISD population-weighted SIMD. The spine chart shows figures for calendar year 2013, with available time trends from 2002.

There have been four relevant SIMD releases for the time period covered by profiles time trend (2004, 2006, 2009 and 2012). To ensure that the SIMD categories are the best available representation of deprived areas at each of the points in the time, we apply index release most pertinent to particular year in trend.

No suppression is required for this indicator.

For information on how the SIMD 2012 is calculated please see the SIMD website: [SIMD2012](#) and [SIMD2012 Background Data](#).

#### **Adults rating neighbourhood as a very good place to live (45)**

This indicator measures percentage of adults participating in the Scottish Household Survey (SHS) who rated their neighbourhood as a 'very good place to live'.

The measure is derived by dividing the number of respondents who answered 'very good' to SHS question: "Thinking about your neighbourhood, how would you rate it as a place to live?" by the total number of people asked the question. The term 'neighbourhood' is undefined in the questionnaire and left up to the interviewee to define it. If however the interviewer is pushed they are instructed to define 'neighbourhood' as "the street you live in and the streets nearby" for 'urban' and "the local area" for 'rural'.

The spine chart shows figures for survey year 2013. From 2012 onwards, the SHS was substantially redesigned to produce some results at local authority level on an annual basis. Therefore in the time trend figures are presented for combined survey years 2007- 2008 and 2009- 2010, while for single survey years in 2012 and 2013. There was no SHS survey in 2011.

No suppression is required for this indicator.

### **Indicators 46 to 52 – Women's & children's health**

#### **Teenage Pregnancies (46)**

This indicator shows teenage pregnancies as a three-year rolling average number and three-year average crude rate per 1,000 females aged 15-19.

Data based on pregnancies for mothers under 20 years have been presented within the ScotPHO profiles 2015 for several reasons:

- the relatively small number of pregnancies in those aged under 15 precludes presentation of robust data at the required geographies.
- this information aligns to currently published ISD data.

- this information may be useful for planning purposes locally.

It should be recognised that pregnancies in those aged 15 to 19 are not necessarily associated with poorer outcomes for mothers and infants. Accordingly, local interpretation of this indicator is vital, and values for this indicator are not categorised as 'better' or 'worse' than the Scottish average within spine charts.

To improve the robustness of the dataset, data have been aggregated over three years. The source for this indicator is NRS registered births and stillbirths, and notifications of abortions to the Chief Medical Officer for Scotland under the Abortion Act 1967.

Figures presented in the spine chart are for 2010-2012 calendar year rolling average, with time trend available from 2002-2004.

Numbers less than or equal to 10 have been suppressed.

### **Mothers smoking during pregnancy (47)**

This indicator shows women recorded as a 'current smoker' at antenatal booking appointment: three-year rolling average number and percentage of all women with a known smoking status at booking (those with a smoking status of 'unknown' have been excluded).

There is considerable pressure on women not to smoke during pregnancy, and there is evidence of under-reporting by women of their smoking behaviour at the booking clinic (see the latest [ISD births](#) report for further information). However, this issue is being addressed, and the issue of under-reporting has improved in recent years. This may have had an effect on prevalence levels and therefore trend data, thus care should be taken in interpreting the results.

Figures presented in the spine chart are for aggregate 2011-2013 financial years and time trend available from 2002-2004. No suppression is required for this indicator.

### **Low weight live births (48)**

Low infant birth weight is associated with infant mortality and health problems in later life. Infants who have a low birth weight are also likely to spend longer in hospital. This indicator reports three-year rolling average number and percentage of low weight (under 2,500g) live full-term (at least 37 week) singleton births of all live full term singleton births.

Figures presented in the spine chart are for aggregate 2011-2013 financial years and time trend available from 2002-2004. No suppression is required for this indicator.

### **Babies exclusively breastfed at 6-8 weeks (49)**

This indicator shows number of babies reported by parent as being exclusively breastfed at 6-8 week review as a three-year rolling average number and percentage. Denominator is the total number of babies receiving a 6-8 week review.

These statistics are derived from breastfeeding data recorded at the 6-8 week review, for NHS Boards in Scotland which participate in the Child Health Systems Programme Pre-School system (CHSP-PS).

Among participating NHS Boards, the majority of 6-8 week reviews are carried out before babies are 9 weeks old. The maximum age limit for the 6-8 week review is recommended as 12 weeks. Variation in the timing of the 6-8 week review may affect the reported rates as there is a known drop-off in breastfeeding rates with time.

The number of NHS Boards using the CHSP Pre-School system and recording data has increased since 2003/04 from 10 to all 14 NHS Boards in Scotland. NHS Western Isles have recorded data from 2006/07, NHS Shetland from 2008/09, and NHS Grampian and NHS Orkney from 2010/11. Data for NHS Grampian and NHS Orkney for 2010/11 are partial. In addition it should be noted that NHS Highland did not fully implement the system until May 2007. Further information regarding data quality and completeness can be obtained from the [2014 ISD Breastfeeding Statistics report](#).

Figures presented in the spine chart are for aggregate 2011-2013 financial years, with time trend available from 2002-2004. No suppression is required for this indicator.

### **Child dental health in primary 1 and 7 (50 - 51)**

This indicators show number and percentage of (depending on the indicator) either Primary 1 (5-year old) or Primary 7 (11-year old) children receiving a 'Percentage with Letter C (Low Risk)' from Basic Inspection, that is: "No obvious decay experience, but child should continue to see the family dentist on a regular basis."

The percentage of 'C' letters (indicating no obvious decay experience) received by P1 and P7 children should be interpreted with caution, because the proportion of the P1/P7 child population who received a Basic Inspection varies by local authority area, although the expectation is that every child in the country will be seen. In the case of low/uneven reporting rates, data may not be robust at local authority level because the numerator is the number of children inspected, not the whole child population of the local authority. Additionally, comparison of P1 and P7 Basic Inspection results within a local authority area may be inappropriate, because of the different population and service profiles and reporting rates; as may be comparison between this year's indicators and those of previous years.

Further information can be obtained from the [dental team at ISD](#).

Figures presented in the spine chart are for academic year 2013/14. No time tend is available at this point.

Note that there may be some slight differences between profiles and other published data due to rounding and the exclusion of missing data zones.

No suppression is required for these indicators.

### **Child obesity in primary 1 (52)**

This indicator shows the number and percentage of Primary 1 children whose BMI is within the top 5% of the 1990 UK reference range for their age and sex. Denominator is number and percentage of all children reviewed. Data is not available for all areas.

The Child Health Systems Programme - School Aged Children (CHSP-S), from which these data are derived, was introduced in 1993 and the number of participating boards has

increased over the years to all 14 NHS Boards. The body mass index (BMI) statistics cover approximately 92% of children in Primary 1 in Scotland. The recording of this indicator at Data Zone level has vastly improved over time - there were a lot of missing data zones particularly between 2003 - 2007, thus in many cases it looks like there has been a dramatic increase but in fact this could be due to improved recording.

Further information can be obtained from the [ISD Primary 1 Body Mass Index \(BMI\) Statistics Report 2013/14](#).

Figures presented in the spine chart are for academic year 2013/14 and time trend is available from 2002/03. No suppression is required for this indicator.

## **Indicators 53 to 56 – Immunisations and screening**

### **Breast screening uptake (53)**

This indicator shows the three-year rolling average number and percentage of breast screening uptake for all eligible women aged 50 to 70 (routine appointments).

Figures presented in the spine chart are for calendar years 2010-2012. Until 2003-04 only women aged 50-64 years were invited for a routine screen once every three years, then the age range for invitation was extended to include women up to the age of 70 years. This expansion was phased in throughout the country over a three year round of screening. Therefore trend data is available from 2007-2009.

No suppression is required for this indicator.

### **Bowel screening uptake (54)**

This indicator shows bowel screening uptake for all eligible men and women invited (aged 50-74 years) as a three-year rolling average number and percentage.

The Scottish Bowel Screening Programme commenced a phased roll out in June 2007 and by December 2009 all NHS Boards in Scotland were participating in the Programme. All men and women registered with a Community Health Index (CHI) number and aged 50-74 years are invited to participate and be screened every two years.

Eligible men and women are posted a guaiac-based faecal occult blood test kit (FOBT) which should be completed at home. This involves collecting 2 samples from each of 3 separate bowel movements. The kit is returned in a pre paid envelope to the central screening centre in Dundee and tested for hidden traces of blood in the stool. Individuals who have a positive FOBT result are referred to their local hospital for assessment and, where appropriate, offered a colonoscopy as the first line of investigation.

Detailed information about the Scottish Bowel Screening Programme can be found on the [ISD Bowel Screening web pages](#).

Figures presented in the spine chart are for calendar years 2010-2012, and time trend is available from 2008-2010. No suppression is required for this indicator.

### **Immunisation uptake at 24 months (55 – 56)**

This indicator shows the immunisation uptake for children at 24 months, expressed as a three-year rolling average number and percentage of children for (depending on indicator) MMR (measles, mumps and rubella) or 5 in 1 (diphtheria, pertussis, tetanus, polio, hib) vaccinations.

The results for the immunisation uptake indicators do not exactly match immunisation statistics published on the ISD website. This is because we used the child's address of residence rather than the address of the child's GP practice. Additionally, some children do not have a postcode recorded so they are included in the Scotland total figure but not at lower geographical levels.

Figures presented in the spine chart are for calendar years 2012-2014, and time trend is available from 2003-2005. No suppression is required for these indicators.

## 6. Comparison with 2014 profiles release

In general, the 2015 release is an update to 2014 profiles release. However, there have been some changes in definition or methodology for many indicators, which mean they are not comparable between the two sets of profiles. Details of changes are noted in a table attached below.

Table 1: Indicators which have been changed between 2014 and 2015 profile release

| Indicator number | Indicator  | Changes made between 2014 and 2015 release   |
|------------------|--|--|
| 1, 2             | Life expectancy (males and females)                        | Intermediate geography/zone level as well as time trends have been added.  |
| 3                | Deaths all ages  | Intermediate geography/zone level as well as time trends have been added.<br><br>Change in number reported from 3-year total to 3-year rolling average.  |
| 4                | All-cause mortality amongst 15-44 year olds                | New indicator  |
| 5, 6             | Early deaths from coronary heart disease and cancer (<75s) | Intermediate geography/zone level as well as time trends have been added.<br><br>Change in number reported from rolling 3-year total to rolling 3-year average.  |
| 7                | Estimated smoking attributable deaths                      | Change from 3-year total number and 3-year average percentage to 2-year average number and 2-year directly age-sex standardised rate.  |
| 8                | Smoking prevalence   | Time trend has been added.   |
| 9                | Alcohol related hospital stays                             | Intermediate geography/zone level has been added and time trend extended until financial year 2002.  |
| 10               | Deaths from alcohol conditions                             | Change of time period definition from single year to 5-year rolling average.<br><br>Intermediate geography/zone level has been added and time trend extended until financial year 2002.                |
| 11               | Drug related hospital stays                                | Change of time period definition from single year to 3-year rolling average.<br><br>Intermediate geography/zone level has been added and time trend extended until combined 2002-2013 financial years. |
| 12               | Active travel to work                                      | Data available now also on NHS Board level.  |

|        |   |   |
|--------|---|---|
|        |   | Time trend has been added.  |
| 13     | Patients registered with cancer   | Change from 3-year total number and 3-year average percentage to 3-year average number and 3-year directly age-sex standardised rate.<br><br>Intermediate geography/zone level as well as time trends have been added.  |
| 14     | Patients hospitalised with COPD   | Change in definition: previously based only on primary diagnosis, now all 6 diagnostic positions taken into account as COPD is not always the main cause of hospitalisation<br><br>Change from 3-year total number to 3-year average number.<br><br>Intermediate geography/zone level as well as time trends have been added. |
| 15, 16 | Patients hospitalised with CHD and asthma                                     | Change from 3-year total number to 3-year average number.<br><br>Intermediate geography/zone level as well as time trends have been added.  |
| 17, 18 | Patients with emergency hospitalisations; multiple emergency hospitalisations | Change from 3-year total number to 3-year average number.<br><br>Intermediate geography/zone level as well as time trends have been added.  |
| 19     | Road traffic accident casualties  | Change from 3-year total number to 3-year average number.<br><br>Intermediate geography/zone level as well as time trends have been added.  |
| 20     | Patients prescribed drugs for anxiety / depression/ psychosis                 | Time trend has been added.  |
| 21     | Patients with a psychiatric hospitalisation                                   | Change from 3-year total number to 3-year average number.<br><br>Intermediate geography/zone level as well as time trends have been added.  |
| 22     | Deaths from suicide   | Change from 5-year total number to 5-year average number.<br><br>Intermediate geography/zone level as well as time trends have been added.  |
| 23     | Adults claiming incapacity benefit /  | Change from measurement taken from quarter ending February to quarter ending May.   |

|        |   |  |
|--------|---|--|
|        | severe disability allowance and support allowance                           | Intermediate geography/zone level as well as time trends have been added.  |
| 24     | Percentage of people (65+) with high levels of care needs cared for at home | Time trend has been added.   |
| 25     | Children looked after by Local Authority                                    | Profiles released in 2014 described 'year' by first half of the academic year, i.e. August 2013-July 2014 would be shown as 2013, while 2015 release shows the same period as 2014 to be in line with the SG publications.<br><br>Time trend has been added. |
| 26     | Single adult dwellings  | Intermediate geography/zone level as well as time trends have been added.  |
| 27     | Average tariff score of all pupils on the S4 roll                           | Intermediate geography/zone level as well as time trends have been added.  |
| 28, 29 | Primary and secondary school attendance                                     | Intermediate geography/zone level as well as time trends have been added.  |
| 30     | Working age adults with low or no qualifications                            | Data available now also on NHS Board level.<br><br>Time trend has been added.  |
| 31, 32 | Population income deprived; working age population employment deprived      | Uses 2011 Census based population mid-year estimate as denominator (2001 Census-based population estimates used previously).<br><br>Intermediate geography/zone level as well as time trends have been added.  |
| 33     | Working age population claiming out of work benefits                        | Broader definition, includes claimants of key out of work benefits, not only jobseekers allowance (JSA).<br><br>Intermediate geography/zone level as well as time trends have been added.  |
| 34     | Young people not in education, employment or training (NEET)                | New indicator.   |
| 35     | Children living in poverty  | New indicator.   |
| 36     | People claiming pension credits (aged 60+)                                  | Change from measurement taken from quarter ending February to quarter ending May.<br><br>Intermediate geography/zone level as well as time   |

|            |  |   |
|------------|--|---|
|            |  | trends have been added.   |
| 37         | Crime rate   | Uses 2011 Census based population mid-year estimate as denominator (2001 Census-based population estimates used previously).<br>Intermediate geography/zone level as well as time trends have been added. |
| 39         | Referrals to Children's Reporter for violence-related offences | Time trend has been added.  |
| 40, 41, 42 | Domestic abuse; violent crimes recorded; drug crimes recorded  | New indicators.   |
| 43         | Population within 500m of derelict site                        | Intermediate geography/zone level as well as time trends have been added.<br>Change of data source from SNS to SVDL.  |
| 44         | People living in 15% most 'access deprived' areas              | Uses 2011 Census based population mid-year estimate as denominator (2001 Census-based population estimates used previously).<br>Intermediate geography/zone level as well as time trends have been added. |
| 45         | Adults rating neighbourhood as a very good place to live       | Data available now also on Health Board level.<br>Time trend has been added.  |
| 46         | Teenage pregnancies  | Change from 3-year total number to 3-year average number.<br>Intermediate geography/zone level as well as time trends have been added.  |
| 47         | Mothers smoking during pregnancy                               | Change from 3-year total number to 3-year average number.<br>Intermediate geography/zone level as well as time trends have been added.  |
| 48         | Low weight live births   | Change from 3-year total number to 3-year average number.<br>Intermediate geography/zone level as well as time trends have been added.  |
| 49         | Babies exclusively breastfed at 6-8 weeks                      | Change from 3-year total number to 3-year average number.<br>Intermediate geography/zone level as well as time trends have been added.  |

|        |   |   |
|--------|---|---|
| 50, 51 | Child dental health in primary 1 and 7            | Intermediate geography/zone level has been added.                         |
| 52     | Child obesity in primary 1                        | Intermediate geography/zone level as well as time trends have been added. |
| 53, 54 | Breast and bowel screening uptake                 | Intermediate geography/zone level as well as time trends have been added. |
| 55     | Immunisation uptake at 24 months (MMR) and 5 in 1 | Intermediate geography/zone level as well as time trends have been added. |

## Glossary

|   |   |
|---|---|
| European age-sex standardised rate (EASR) | All European age-sex standardised rates in Health and Wellbeing profile 2015 release are standardised to the European standard population 2013. Standardised rates are used to allow comparisons across geographical areas by controlling for differences in the age structure of local populations. They give the number of stays (per 100,000 in this case) that would occur in a standard population if that population had the age-specific rates of the area being investigated.   |
| ICD-10                                    | World Health Organisation International Statistical Classification of Diseases and Related Health Problems, tenth revision 4 <sup>th</sup> edition. These national coding standards are used when translating diagnoses and other health related problems recorded in a patient's medical record for morbidity coding. The classification of diagnoses using ICD-10 is a mandatory national requirement for the Scottish Morbidity Record dataset and other datasets.   |
| National Registry of Scotland (NRS)       | The National Registry of Scotland (formerly General Register Office for Scotland) collects the medical certificate of cause of death together with any additional information provided subsequently by the certifying doctor.   |
| Scottish Cancer Registry (SMR06)          | Contains information on all new cases of cancer including primary malignant neoplasms, carcinoma in situ, neoplasms of uncertain behaviour and benign brain and spinal cord tumours. Is the collection, maintenance and management of data on every new diagnosis of cancer occurring in a population. In Scotland, approximately 47,000 cancer registrations are made annually. The Scottish Cancer Registry database has been managed by ISD since 1997, and holds over 1,500,000 records dating back to 1958, when the registry began.   |
| Scottish Morbidity Record 01 (SMR01)      | Is an episode based patient record relating to all inpatient and day cases discharged from specialities other than mental health, maternity, neonatal and geriatric long stay specialities in NHS Scotland. A record is generated for each inpatient and day case episode, of which there are about 1,200,000 each year. Attendances at Accident and Emergency that do not result in an admission are not included. Data collected include inpatient identifiable and demographic details, episode management details and general clinical information. Up to six diagnoses are recorded per admission using the ICD-10 classification. |
| Scottish Morbidity Record 04 (SMR04)      | Records information on all inpatient admissions and discharges from NHS mental health (psychiatric) hospitals in Scotland.  |
| Scottish Household Survey (SHS)           | The Scottish Household Survey is designed to provide reliable and up-to-date information on the composition, characteristics, attitudes and behaviour of Scottish households and individuals, both nationally and at a sub-national level. It covers a wide range of topics to allow links to be made between different policy areas.   |

The Scottish Index of Multiple Deprivation (SIMD)

The Scottish Index of Multiple Deprivation (SIMD) identifies small area concentrations of multiple deprivation across all of Scotland in a fair way. The SIMD is based on small areas called Data Zones.

## Appendix I: Changes to the European Standard Population

The appendix explains why European Age-Sex Standardised Rates based on the 1976 and 2013 ESP are not comparable.

### **Example: General acute inpatient and day case discharges in Scotland with an Alcohol-related diagnosis in any position: 1997/98-2012/13.**

Based on the number of discharges observed in each of the financial years, the following rates were calculated:

#### Crude Rate

In this example the crude rate is the number of people who are admitted to hospital or die from a specific condition in a country or region, divided by the total population of that country or region and the total time at risk. The rate is normally expressed 'per 1,000 per year', 'per 10,000 per year' or 'per 100,000 per year'. Comparing crude rates can be misleading if the age structures of the populations being compared are different. For example areas with larger percentages of younger people may have lower death rates than areas with larger percentages of older people. Differences based on comparisons of crude rates may reflect differences in age structure rather than real differences in the risk of disease. Age-Sex standardised rates take account of differences in age structure and allow comparisons to be made between different geographical areas that reflect real differences in risk rather than differences in age structure.

#### European Age-Sex Standardised Rate (EASR) using ESP1976

The age-specific rate is calculated for each 5 year age group by dividing the number of cases by the population and time at risk. The weighted average of all the age-specific rates is calculated to give the overall EASR. The weights are based on the population in each 5 year age group in the 1976 European Standard Population. The 1976 European Standard Population has a relatively young age structure. This has the effect of producing higher rates for conditions common in younger ages and lower rates for conditions common at older ages.

#### European Age-Sex Standardised Rate (EASR) using ESP2013

The age-specific rate is calculated for each 5 year age group by dividing the number of cases by the population and time at risk. The weighted average of all the age-specific rates is calculated to give the overall EASR. The weights are based on the population in each 5 year age group in the 2013 European standard population. The 2013 European standard population has a relatively old age structure. This has the effect of producing lower rates for conditions common in younger ages and higher rates for conditions common at older ages.

## Appendix II: Methods used to calculate confidence intervals

| For indicator presented as:         | Method               | Comments/<br>Assumptions   | References   |
|-------------------------------------|----------------------|--|--|
| Proportions and Percentages         | Wilson Score method  | Wilson Score performs well when the numerator and/or denominator is small.   | Wilson EB.<br>Probable inference, the law of succession, and statistical inference.<br><i>J Am Stat Assoc</i> 1927; <b>22</b> :209-12. |
| Crude rates                         | Byar's approximation | Performs well with low rate and large denominator (i.e. the variability in the observed event $O$ is described by the Poisson distribution). This method is simple to calculate and gives very accurate approximations to the exact Poisson probabilities even for small counts. |  |
| Directly age-sex standardised rates | Dobson               | Rates assume the Poisson distribution.   | Dobson A et al.<br>Confidence intervals for weighted sums of Poisson parameters.<br><i>Stat Med</i> 1991;10:457-62.                    |

## Appendix III: Codes used for death and hospital patient indicators

| Indicator number | Indicator   | ICD-10 Codes  |
|------------------|---|---|
| 5,15             | Coronary heart disease deaths and hospital patients | ICD-10: I20-I25<br>(principal diagnosis only)   |
| 6,13             | Cancer registrations and deaths                     | ICD-10: C00-C97 (excl C44)  |
| 7                | Estimated smoking attributable deaths               | Cancers: C00-C14, C15, C16, C25, C32, C33-34, C53, C64-C66, C68, C67, C80, C92<br><br>Cardiovascular diseases: I20-I25, I00-I09, I26-I51, I60-I69, I70, I71, I72-I78<br><br>Respiratory diseases: J10-J18, J40-J42, J43, J44<br><br>Digestive diseases: K25-K27 |
| 9                | Alcohol related stays                               | <a href="#">See Appendix IV</a>   |
| 10               | Deaths from Alcohol conditions                      | <a href="#">See Appendix IV</a>   |
| 11               | Drug related hospital stay                          | <a href="#">See Appendix V</a>  |
| 14               | COPD hospital patients                              | ICD-10: J40-J44, J47<br>(all diagnostic positions)  |
| 16               | Asthma hospital patients                            | ICD-10: J45, J46<br>(principal diagnosis only)  |
| 17               | Emergency admission hospital patients               | Old type admission code 4,5,6,7,8   |
| 18               | Multiple admission hospital patients                | Patients aged 65+ with 2 or more emergency admissions (see codes above) in a year.<br>Excludes dental hospital and geriatric long stay admissions.  |
| 19               | Road traffic accident casualty                      | Type of admission code 32 for hospital admissions<br>(principal diagnosis only)   |

|    |                     |  |
|----|---------------------|--|
|    | patients            | ICD-10: V01-V89 for deaths             |
| 22 | Deaths from suicide | ICD-10: X60-X84, Y10-Y34, Y87.0, Y87.2 |

## Appendix IV: Codes used for alcohol- and drug- related hospital stays

ICD-10 codes used to count the number of alcohol-related hospital stays

| ICD-10 code | Description   |
|-------------|---|
| F10         | Mental & behavioural disorders due to use of alcohol              |
| K70         | Alcoholic liver disease   |
| X45         | Accidental poisoning by and exposure to alcohol                   |
| X65         | Intentional self-poisoning by and exposure to alcohol             |
| Y15         | Poisoning by and exposure to alcohol undetermined intent          |
| Y90         | Evidence of alcohol involvement determined by blood alcohol level |
| Y91         | Evidence of alcohol involvement determined by level intoxication  |
| E24.4       | Alcohol induced Pseudo-Cushing's syndrome                         |
| E51.2       | Wernicke's Encephalopathy   |
| G31.2       | Degeneration of nervous system due to alcohol                     |
| G62.1       | Alcoholic polyneuropathy  |
| G72.1       | Alcoholic myopathy  |
| I42.6       | Alcoholic cardiomyopathy  |
| K29.2       | Alcoholic gastritis   |
| K86.0       | Alcohol-induced chronic pancreatitis                              |
| O35.4       | Maternal care for (suspected) damage to foetus from alcohol       |
| P04.3       | Foetus and newborn affected by maternal use of alcohol            |
| Q86.0       | Fetal alcohol syndrome (dysmorphic)                               |
| R78.0       | Finding of alcohol in blood                                       |
| T51.0       | Toxic effect of ethanol   |
| T51.1       | Toxic effect of methanol  |
| T51.9       | Toxic effect of alcohol, unspecified                              |
| Y57.3       | Alcohol deterrents  |
| Z50.2       | Alcohol rehabilitation  |
| Z71.4       | Alcohol abuse counselling and surveillance                        |
| Z72.1       | Alcohol Use   |

ICD-10 codes used to count the number of drug-related hospital stays

| <b>ICD-10 Code</b> | <b>Description</b>   |
|--------------------|--|
| F11                | Mental and behavioural disorders due to use of opioids   |
| F12                | Mental and behavioural disorders due to use of cannabinoids  |
| F13                | Mental and behavioural disorders due to use of sedatives or hypnotics                              |
| F14                | Mental and behavioural disorders due to use of cocaine   |
| F15                | Mental and behavioural disorders due to use of other stimulants, including caffeine                |
| F16                | Mental and behavioural disorders due to use of hallucinogens                                       |
| F18                | Mental and behavioural disorders due to use of volatile solvents                                   |
| F19                | Mental and behavioural disorders due to multiple drug use and use of other psychoactive substances |

## Appendix V: Codes used for alcohol-related deaths

ICD-10 codes used to count the number of alcohol-related deaths (underlying cause); as also used by the National Records of Scotland (NRS).

| ICD-10 code | Description  |
|-------------|--|
| F10         | Mental & behavioural disorders due to use of alcohol     |
| K70         | Alcoholic liver disease                                  |
| K73         | Chronic hepatitis, not elsewhere classified              |
| X45         | Accidental poisoning by and exposure to alcohol          |
| X65         | Intentional self-poisoning by and exposure to alcohol    |
| Y15         | Poisoning by and exposure to alcohol undetermined intent |
| G31.2       | Degeneration of nervous system due to alcohol            |
| G62.1       | Alcoholic polyneuropathy                                 |
| I42.6       | Alcoholic cardiomyopathy                                 |
| K29.2       | Alcoholic gastritis                                      |
| K74.0       | Hepatic fibrosis   |
| K74.1       | Hepatic sclerosis  |
| K74.2       | Hepatic fibrosis with hepatic sclerosis                  |
| K74.6       | Other and unspecified cirrhosis of liver                 |
| K86.0       | Alcohol-induced chronic pancreatitis                     |